

which overlap somewhat, some of those of the earlier cycle living until after the appearance of those of the later one, and in some instances mating with them.

Upon this hypothesis the larvæ which hibernated direct from the egg would all start feeding at about the same time and so would account for a simultaneous appearance of many fresh specimens about the beginning of August, while those which emerge over a considerable time in the early summer would be from those larvæ which had passed one or two moults the previous year.

Mr. Edwards's later view, that there are probably two broods in Virginia, the one descended from the other, I hold to be untenable in view of the long egg period, even in the heat of early August. Nor am I inclined to accept as probable the suggestion of Mr. Scudder, based upon the experience of Vaudouer in the case of the European *Euphrosyne*, of a lethargic period in the case of that portion of the brood which does not reach the imago state till August.

I hope to pursue my experiments further, and to that end appeal for the assistance of other lepidopterists, and will gladly pay, either in money or exchange, for living specimens of the female of this species sent me not later than the first week in July. These can be sent by mail in suitable boxes addressed to me at 384 St. Paul St., Montreal.

### TRYCHOSIS TUNICULA-RUBRA, N. S.

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While studying the habits of *Gelechia gallæ-diplopappi*, I have repeatedly met with a parasite, in the galls of the moth, that I have not found elsewhere.

I have submitted imagos of the species to several of our most eminent hymenopterists, and all agree that the species is new to science and undescribed. To Mr. Ashmead I am indebted for the information that it will properly come into Föster's genus *Trychosis*.

The full-grown larva of the species is a fusiform, legless grub, three-tenths of an inch long, and having thirteen segments, counting the head. The anal segment is somewhat elongated. The creature is of a white waxy appearance, with a tinge of pink; and it has a few short hairs on its face and along the back and sides. The spiracles are well defined. On the ventral surface of the grub are a number of extensile and retractile pads or pseudopodia, by the aid of which it fastens itself to its victim, or

moves about within the hollow gall. Its mouth is large and set well up in the face, and the upper lip has a beak-like curve.

On the 10th of July, 1891, I witnessed the cleaning out of a chrysalis case of *G. gallæ-diplopappi* by a grub of this species. The creature, having finished its meal, left the case and immediately proceeded to spin its cocoon. When completed, this cocoon was long and sack-like, but compact in texture. It was white at first, but it darkened with age. The perfect insect burst from it on the 10th of June of the following year.

On another occasion, on opening a gall, I found a grub of the species just finishing a dessert of the very case of its victim. In this instance the grub, in a short time, voided the indigestible parts of its meal in dark pellets, and then commenced to spin.

I opened a cocoon of the parasite on the 25th of March last, with a view to describing the pupa. I found that the pupal change had not taken place. Preparations for it, however, seemed to be commencing. The head was becoming rounded; the mouth was sealed up, but its outline was still apparent; the pseudopodia were disappearing; the body was becoming attenuated.

I put the creature back into its ruptured envelope, but it was not content to remain in it—it wriggled out, so I placed it in a clean paper box, and, I am glad to say, its changes went on as if nothing unusual had happened.

By the 1st of April the head, thorax and abdomen of the insect could be traced under the skin. The first two had become yellowish, and the eyes, which I had first noticed as faint streaks, now showed as brownish oblong patches.

In the night of April 1-2 the pupal change took place. In the morning I found the shrivelled larva skin still clinging to the extremity of the body. The main parts were now of distinct form, and the antennæ and limbs appeared in proper shape, extended beneath the insect, and beautifully white and pellucid. The only colouring was in the eyes, which were large and brown.

On April 6th I found that the ocelli were distinctly seen, and that the upper part of the abdomen was beginning to darken.

On the 8th the thorax began to turn black. On this date I made a drawing of the pupa. The insect seemed to object to the strong light in which I had placed it. I noticed twitchings of the legs and antennæ. I therefore put it back in its box as soon as possible.

On the 9th I found that the head and thorax were quite black, while the legs and antennæ were still pellucid.

On the 11th the red of the three first segments of the abdomen on the upper side and the black of the remaining segments on the upper side were seen. The upper portions of the legs also and the bases of the antennæ were taking colour.

On the 13th the insect was fully coloured, with the exception of a white streak on either side of the abdomen. The legs had begun to spread themselves.

In the night of the 13th the wings burst from their cases, and before the close of the day following the insect had risen upon its feet.

No doubt the warmth of my house, and the rupturing of the cocoon, hastened the changes of the insect. I should say the usual time of the creature's appearance in the perfect state is the middle of June. The galls formed by the Gelechian begin to show themselves in the first week of June, and there is only one brood of *G. gallæ-diplopappi* in the year.\*

Descriptions of the imagos, male and female, of *T. tunricula-rubra*.—

♀.—Expanse of wings, one-half inch; length of body, one-quarter inch; length of antenna, two-tenths inch; length of ovipositor, one-tenth inch.

HEAD black, punctured, and set with whitish hairs; face convex; clypeus somewhat nasiform, hairy; compound eyes of a rich madder-brown; ocelli black and prominent; palpi long, five-jointed, flavescent; antennæ filiform, basal joint oblong-ovate, black and hairy. In the flagellum, which is brown, are thirty-one joints, of which the first, counting from the ring-joint, is four times longer than thick.

THORAX black, shining, deeply punctured; mesothorax and scutellum convex; legs long and slender, the coxæ black, trochanters and femora fuliginous, tibiæ and tarsi ferruginous; wings iridescent, slightly hairy; costal and externo-medial nervures hairy; stigma large and brown; areolet rather large, pentagonal; cubito-discoïdal cell large; the third discoïdal cell and the first apical cell of moderate size; the second apical cell large; the basal nervures slightly and regularly curved.

ABDOMEN fusiform; petiole rather long and slender, recurved, jet black; the three first abdominal segments deep red, the remainder black; ovipositor ferruginous, straight, stiff and pointed—its case fuscous, blunt and hairy.

♂.—General appearance darker and less robust than that of the female. Antennæ dark brown, nearly black, twenty-six joints in the flagellum, the first being five times as long as thick; eyes prominent, brown; ocelli black; palpi five-jointed, brown; coxæ black, hairy and punctured—the hindmost pair unusually large; first pair of legs ferruginous; the rest fuliginous, with knees of lighter colour; tibial spurs stout; wings smoky; abdomen long and slender; petiole black, extended, horn-shaped; three following segments red, the first and third edged with black; the rest of the abdomen black.

\* Wherever I have found *T. tunricula-rubra* I have found the skin over the opening of the gall ruptured, I suppose by the ovipositor of the mother Trychosis.